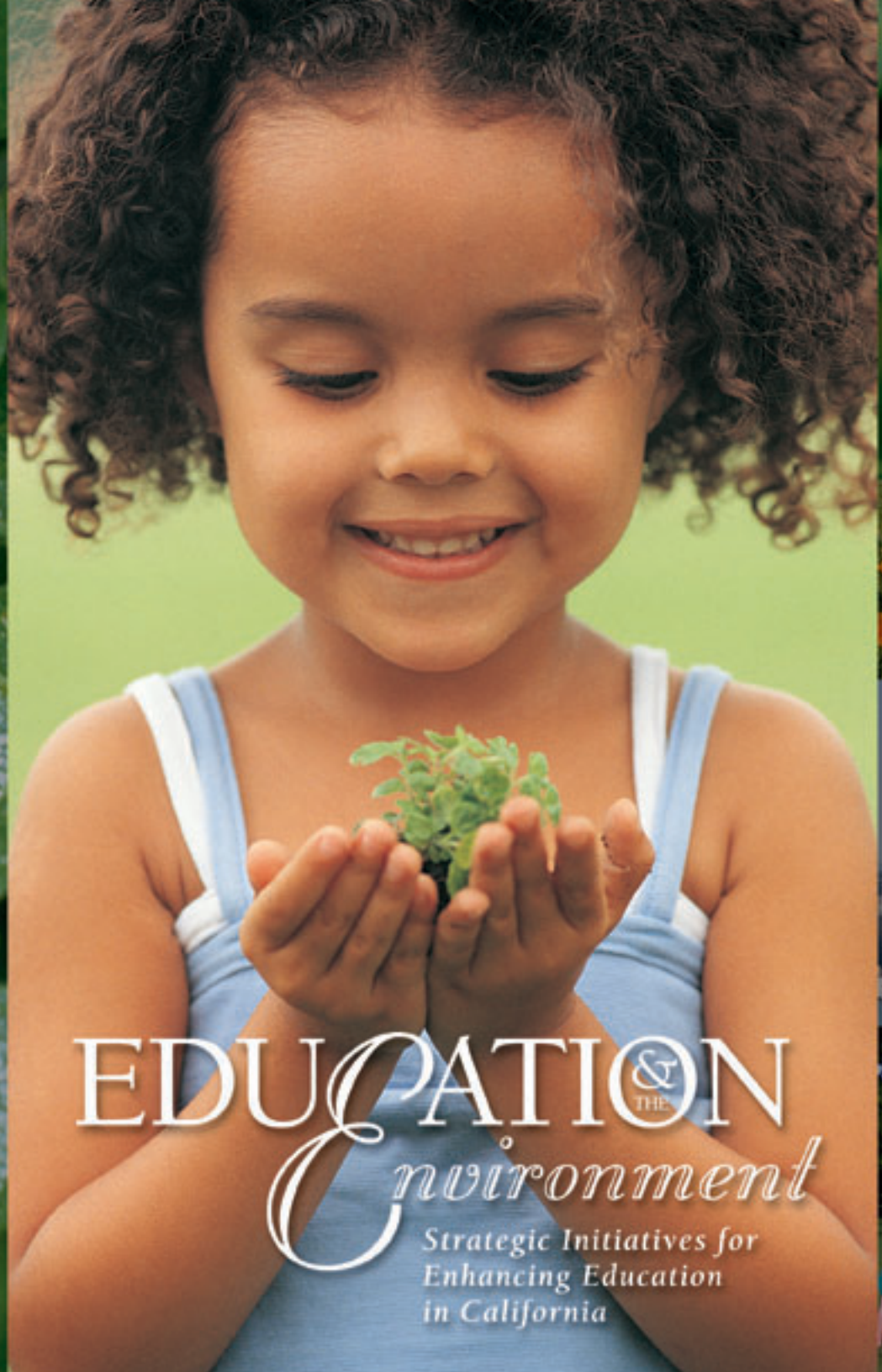
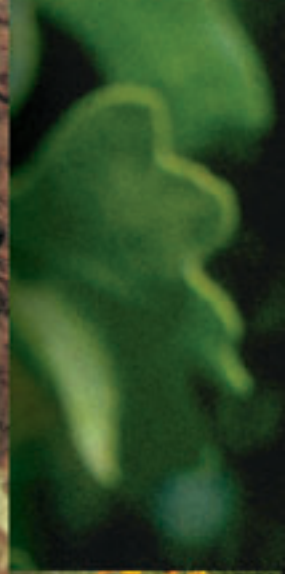




EDUCATION & THE Environment

Strategic Initiatives for Enhancing Education in California

Acknowledgments

Project Staff

Jennifer Rigby, Project Manager
Bill Andrews, Codirector
Kay Antunez, Codirector
Lori Mann, Writer
Ed Hensley, Writer and Editor
Ted Smith, Editor
Mike Miller, Graphic Designer

State Plan Development Committee

Note: Affiliations are listed for identification purposes only.

Gerald Lieberman, Ph.D., Chair, Document Working Group, State Education and Environment Roundtable
Jeff Hohensee, Chair, Information Gathering Working Group, TreePeople
Lou Smallwood, Chair, Public Information Working Group, Smallwood Kahoe Associates
Bill Andrews, California Department of Education
Kay Antunez, California Department of Forestry and Fire Protection
Carol Baird, Ph.D., California Institute for Biodiversity
Tricia Broddrick, California Integrated Waste Management Board, California Environmental Protection Agency
Jeff Bryant, California Regional Environmental Education Community Network
Robert Lucas, California Council for Environmental and Economic Balance
Lori Mann, Environmental Education Consultant
Barbara Moreno, Ed.D., National Board Certified Teacher, Open Charter School
Jennifer Rigby, The Acorn Group
Celeste Royer, California Regional Environmental Education Community Network

State Superintendent's Environmental Education Task Force Steering Committee

Bill Andrews, California Department of Education
Bob Borzelleri, Department of Toxic Substances
Tricia Broddrick, California Integrated Waste Management Board, California Environmental Protection Agency
Kathy Fletcher, California Environmental Protection Agency
Ivan Golakoff, San Diego County Water Authority
Renee Hoyos, The Resources Agency
Gerald Lieberman, Ph.D., State Education and Environment Roundtable
Kathy Machado, Santa Clara Valley Water District
Tom Mays, State Water Resources Control Board
Kris McNamara, The Walt Disney Company
Ray Ng, Sandia National Laboratories
Donna Pozzi, Department of Parks and Recreation
Leonard Robinson, TAMCO Steel
Lou Smallwood, Smallwood Kahoe Associates
Mrylys Stockdale, State Water Resources Control Board

Listening Session Facilitators

William Baker, Group Dynamics Associates
Augie Scornaienchi, Consultant

And 700 listening session participants and 72 reviewers whose input forms the foundation of this document.

Cash contributions

California Department of Education, Office of Environmental Education
California Integrated Waste Management Board
California State Parks Foundation
Golden State Environmental Education Consortium

In-kind contributions:

Cabrillo Pavilion Art Center
California Citrus State Historic Park
California Community Forests Foundation
California Department of Education, Office of Environmental Education
California Department of Forestry and Fire Protection
California Environmental Protection Agency
California Integrated Waste Management Board
California Regional Environmental Education Community Network
Del Norte County Office of Education
Department of Parks and Recreation
Department of Toxic Substances
Department of Water Resources
Hubbs/Sea World Research Institute
Humboldt County Office of Education
Humboldt State University
John Deitch Center
Long Marine Laboratory
Los Angeles County Department of Public Works
McConnell Foundation
Mendocino County Office of Education
Pacific Energy Center
Port of Stockton
Sonoma County Office of Education
State Education and Environment Roundtable
The Acorn Group
TreePeople
University of California Academic Center, Fresno

Partial list of those who have indicated support for development of this plan

Adopt-A-Watershed
Association for Environmental & Outdoor Education
Audubon Canyon Ranch
Calaveras County Office of Education
California Coastal Commission
California Community Forests Foundation
California Council for Environmental and Economic Balance
California Department of Fish and Game / Project WILD
California Department of Food and Agriculture
California Department of Forestry and Fire Protection / Project Learning Tree
California Environmental Protection Agency
California Food, Land & People
California Integrated Waste Management Board
California Regional Environmental Education Community Network
CalServe Initiative / California Department of Education
California State Parks

Ordering Information

Copies of this publication are available for $11.00 each, plus shipping and handling charges. California residents are charged sales tax. Orders may be sent to the California Department of Education, CDE Press, Sales Office, P.O. Box 271, Sacramento, CA 95812-0271; FAX (916) 323-0823. Prices on all publications are subject to change.

ISBN 0-8011-1571-X

California State Parks Foundation
California State University, Fresno/Central Valley Ag Literacy Program
Catalina Island Conservancy
Chevron
Department of Toxic Substances Control
Environmental Education Council of Marin
Environmental Ministries
Golden State Environmental Education Consortium
Keep California Beautiful
Long Marine Laboratory / UC Santa Cruz
Ma'at Youth Academy
Monterey County Office of Education
National Audubon Society
Network for Environmental Science Teaching
Office of Environmental Education / California Department of Education
PG&E Pacific Energy Center
San Bernardino County Superintendent of Schools
San Diego County Water Authority
San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy
San Joaquin County Office of Education
San Luis Obispo County Office of Education
Santa Clara County Office of Education
Santa Clara Valley Water District
Santa Cruz County Office of Education
Sierra Club
Stanislaus County Office of Education
State Education and Environment Roundtable
TAMCO Steel
The Resources Agency
The Walt Disney Company
Three Circles Center
TreePeople
Tuolumne County Office of Education
University of California Cooperative Extension, 4 H Youth Development
Water Education Foundation / Project WET
WestEd
Yolo County Office of Education
Yolo-Solano Air Quality Management District

Table of Contents

Executive Summary

Much of California's economic prosperity has depended on how we have used our environment. In the future it will depend on how we understand our environment. In its broadest definition, our environment is the Now that joins our Past to our Future. It is not just ancient redwoods; it's the bush in your backyard; it's you and I. Our environment links everyone and everything.

This document is more of a portal than a plan. Its ultimate goal is the goal of all good educators and good education—to give students a better chance to become the best citizens possible.

Specifically, the plan proposes ways to combine environment and education in a new way. Regardless of preference and politics, people agree:

- Awareness and understanding of the environment are too critical to our future to avoid acting now to increase our understanding.
- Effective, thorough education must be our number one priority as a society—the foundation of foundations.

At first, environment and education might seem to be unrelated except tangentially. This document proposes not just to educate students and other citizens ABOUT the environment, but to incorporate the environment so fundamentally into education that the environment becomes the classroom.

Local California has inspired many artists and thinkers: John Steinbeck and Monterey, David Masumoto and Fresno, Mary Austin and the Mojave, Robinson Jeffers and Carmel, Ansel Adams and Yosemite. What many of them have taught us is that our environment is art, education, life.

Research and classroom-based studies show that students in experiential environment-based education programs learn better, are better citizens at school, and transfer their learning to new situations better. Environment-based education helps students to feel more confident, to feel part of their community, and to think.

By its nature, environment-based education is local but it must be funded and coordinated at a larger level. For that reason, state and federal agencies and organizations that rarely share common interests find a common goal in supporting environmental education, but they are blocked from effective action by fragmented mandates and funding.

California's current environmental education situation parallels what the U.S. Environmental Protection Agency has found nationwide: "environmental education effort is currently too diffused and fragmented to effectively fulfill its crucial role in our society." Once again, California can be and should be the leader. The strategic initiatives at the heart of this document are the portals through which the future can arrive, establishing both the means and the mandate for coordinated and streamlined environment-based education. By taking a leadership position in environmental education, California will:

1. Ensure high caliber environmental education.
2. Disseminate better resources and services more widely.
3. Improve the skills of educators.
4. Ensure quality and cost-effectiveness through ongoing evaluation.
5. Increase support and funding.
6. Establish statewide leadership.

No single area or initiative is the answer. Action and support are essential at many levels. This plan and its initiatives can be the gateways to action for every policymaker, educator, and citizen of California.

Introduction

The Purpose of This Plan

The ultimate goal of this plan is the goal of any dedicated educator in California—to give students a better chance to become the best citizens possible. In a sense, this plan proposes something radical—radical in the sense that today's approaches to teaching arithmetic and grammar were once considered radical. However, they are not new; in fact, they are as old as numbers and speech. But the structure that made those disciplines teachable and transferable is new. They became lenses that helped us see and grasp what was all around us. As such fundamental tools, they shape the way we see our world and ourselves.

This plan proposes the formal recognition of another fundamental structure, something older than language, education, and even humans, but something that includes and unifies them all—our environment.

"Environment" is used for a wide range of meanings, from referring to an untouched natural setting to every possible setting a person might encounter. (Also see "Definition of Terms.") This plan uses the term in the latter sense. There is no place on Earth, no matter how long settled or how built up with human structures, that is not a combination of the natural world and the built world. And there is no wild area, no matter how remote or seemingly inaccessible, that does not affect us or entice us.

In its broadest definition, our environment is the *Now* that joins our *Past* to our *Future*. It is not just ancient redwoods; it's the oak in the backyard; it's our home; most important, it's us. Environment is the point where history meets sociology, science, and philosophy. It is not only where we live, but also when we live, how we live, why we live, who we are, and what we will become. Our environment links everyone and everything and underpins our economy.

Intuitively, we assume that a topic that is part of students' direct daily experience will engage students' attention more actively. A growing body of evidence is proving that education that is based in the local environment engages students, producing direct academic and personal benefits. For example, research shows that environment-based education improves students' academic performance and test scores, reduces discipline and attendance problems, and increases their ability to transfer knowledge to new contexts.

Personal and academic success are so intertwined that they are inseparable in children. Confidence in mathematics and other basics is seamlessly bound to a student's larger sense of confidence. If learning in context makes for better teaching and if the best context is one that is local and meaningful, then education rooted in the local environment is the soundest. Educational opportunities like these are, however, uncommon in most classrooms; therefore, this plan seeks to improve and expand on the statewide infrastructure of educational programs centered on environment-based learning. Underlying the plan is the conviction that such exposure will create a society aware of its dependence on its environment, a society able to make informed decisions about the relationships between the environment and the economy, balance the complex needs of our state, solve existing environmental problems, and prevent new ones.

Two years into the 21st century, environmental education in California is decentralized and, especially in formal education, sporadic. Some school districts regularly teach environmental education; others do not. Despite encouraging and hopeful words from essentially every level of government and society, the state has no mandate, no cohesive administrative structure, and no formal content or performance standards for establishing and evaluating environmental education programs.

This document offers the rationale and strategies to provide the leadership necessary to improve environmental education in California. The target audience is those in positions to set policy, establish structures, and create programs, which includes elected officials, public agencies, philanthropic foundations, business leaders, education leaders, community organizations, nonformal institutions, and active individuals.

The plan provides direction and priorities to legislators, funders, and educators for building a foundation for high quality environment-based education in California. The plan does not promote specific approaches to environmental education but rather promotes policies and administrative structures in which such decisions can be made equitably and appropriately.

There is no place on Earth, no matter how long settled or how built up with human structures, that is not a combination of the natural world and the built world.

The Case for California

During the past 200 years, California's economic prosperity depended on how we used the resources of our environment to meet our needs. In the future it will depend on how we balance our needs with the needs of that environment.

The fact that we live here is the main reason we should get better acquainted with California, but there is more. California's nearly 35 million citizens and trillion-dollar economy make our state not just a force in the global marketplace and a leader among states, but, in effect, a powerful nation in the world by almost all standards. Its biological and geographical riches support most Californians and produce much of the state's wealth. From San Francisco Bay to the Mojave Desert, Mt. Whitney to Badwater, Tule Lake to Palm Springs, "diversity" is too modest a term. Urban and rural, California is home to more unique plant and animal species than any other state. This environment—this California—links Modoc County's sparse population and open space to the dense population and tight spaces of Los Angeles.

Each of us lives at the pivot point between the past that produced our current abundance and the future that our current choices will produce. Balancing the environmental, social, and economic needs of our state poses unprecedented challenges with profound consequences. Meeting these challenges requires that Californians be sensitized to things that could be taken for granted not long ago—clean air to breathe, pure water to drink, timber to harvest, food to eat, land to build and live on, and beautiful places to visit. Only such awareness and understanding can guide us to achieve and maintain a high quality of life for all Californians. During the past 200 years, California's economic prosperity depended on how we used the resources of our environment to meet our needs. In the future it will depend how we balance our needs with the needs of that environment.

Thomas Jefferson told us that a working democracy depends on an enlightened public. The basis of all wisdom is understanding—that is, education. Federal legislation behind current reforms in education calls for schools to ensure that "all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning, and productive employment in our nation's modern economy." Surveys of employers show that they want the same thing: well-rounded workers who care about their surroundings and can also think.

Almost daily, we are reminded of what small farmers know by the nature of their lives and livelihoods: that our lives and our environment are inseparable. Robert Frost once defined "thinking" as "putting this and that together." If students are to be helped to think, the foundation of that process must be to help them to learn to exert the mental effort to see themselves and their surroundings, built and natural, as a seamless fabric. As with the farmer, that process requires not only working the mind but also working the land. Environmental education must not be simply *about* the environment; it must take place *in* the environment.

In California, we have nearly every setting possible—urban, farmland, forest, desert, mountain, wetland, ocean, and island. California is both a top agricultural state and a top tourist attraction. We have Disneyland and Yosemite, Fisherman's Wharf and the Jet Propulsion Laboratory, the Golden Gate and the Gold Country, Death Valley and Silicon Valley. We have Bodie, Barstow, Blythe, Bakersfield, and Bodega Bay. We have farms, freeways, spas, stockyards, hostels, and harbors.

California has inspired and embraced the creative spirit of poets, photographers, writers, musicians, artists, and naturalists. California has nurtured such diverse figures as John Steinbeck, John Muir, Mitsui Yamada, Elna Bakker, David Masumoto, Mary Austin, Joan Baez, Ansel Adams, Wallace Stegner, and Catherine Chang Liu.

Although the richness and diversity of California's people and places are reason enough to make us want to know our state, the health and welfare of our citizens demand that all Californians understand and value the environment in which they live.

Definition of Terms

Education and the environment can be coupled in many ways for many purposes. A numberless combination of administrative structures, educational procedures, environmental purposes, preferred settings, and overall assumptions can be oversimplified into two categories—those that accentuate the environment and those that accentuate education.

Years of discussion among those who work to combine education and the environment can be summarized in the definitions of two terms—"environmental education" and "environment-based education." The differences are subtle and significant, but both fall under the scope of this plan, which aims at merging the two purposes as seamlessly as possible:

- **Environmental education** focuses on environmental "literacy": learning about and caring for the total environment, understanding how humans interact with and are dependent on natural ecosystems, and developing critical-thinking skills to resolve environmental issues.

- **Environment-based education** focuses on educational results: using the environment to engage students in their education through "real-world" learning experiences, with the goals of helping them achieve higher levels of academic success as well as an understanding of and appreciation for the environment.

The touchstone definition of "environmental education" was developed in a 1978 UNESCO conference and published in what is called the "Tbilisi Declaration." It outlines five objectives for environmental education:

- Awareness—awareness and sensitivity to the total environment and its problems
- Knowledge—experience in and understanding of the environment
- Attitudes—concern for and participation in environmental improvement and protection
- Skills—identifying and solving environmental problems
- Participation—active involvement in resolving environmental problems

The touchstone definition of "environment-based education" is a result of research and experience during the previous 20 years in using the environment as an integrating context for learning (EIC). Developed by the State Education and Environment Roundtable, the EIC model for education uses a school's surroundings and community as the context within which educators integrate instruction, environment, and subject-area knowledge. Environment-based education is not focused solely on learning about the environment, nor is it limited to developing environmental awareness. The purpose of EIC is to help students:

- Learn standards-based subject matter.
- Increase thinking and problem-solving skills.
- Develop basic life skills, such as cooperation and interpersonal communications.
- Gain an appreciation for their community and natural surroundings and how they are interrelated.

The two terms are used nearly interchangeably in this plan. Even though their methodologies appear to focus on different goals, in the end both have the same aim: motivated citizens who are informed about the impact that their lifestyle choices make on the health and safety of their local environment.

The Case for Environmental Education

A Nation at Risk,[1] the seminal 1983 indictment of U.S. education, spurred a series of reforms that have sought the key to excellence in education. A main element, generally agreed on, is that integrating subjects aids learning. For that reason, integrated education, interdisciplinary studies, and cross-subject instructional materials have proliferated. The trend is a fortunate and necessary one. The outcome, however, is at times uneven or confused. Even in that tangle of approaches and strategies, environmental education stands out as an engaging and effective instructional approach. When done well, environmental education achieves all the major goals of such integration, as noted in the paragraphs that follow.

Environmental education is hands-on. It uses the local community and the outdoors as a classroom, and it guides learners to be active in their education. Such methods can be particularly effective when the curriculum must engage and instruct culturally and linguistically diverse students, such as those in California.

Environmental education provides meaningful class content. Environmental education introduces children to learning about the world they can see, feel, and touch. As E.O. Wilson, the acclaimed biologist notes, children are naturally "biophilic"– that is, they are drawn towards wildlife and to the outdoors. Children have a natural affinity for environmental education that allows it to be a highly effective springboard for the inclusion of many other areas of study. Besides supplying a broad range of strictly academic benefits, studying the environment – as poet laureat Robert Hass notes concerning his renowned River of Words program – helps children "find their place in the natural world and discover their 'ecological address' as well as they know the name of their street or their town."

Environmental education not only helps children become better educated, but it also helps them become better citizens. By addressing real community issues, environmental education nurtures community involvement and active citizenship — the backbone of our democratic government. Environment-based education emphasizes depth of understanding over breadth, uses group work, and cultivates critical-thinking and problem-solving skills. By applying environmental education to real-life problems, children are also given authentic opportunities to provide service for their communities and solve local problems. Thus, in addition to benefitting their communities, students gain analytical skills that are indispensable in almost any work environment.

Environmental education models the best practices in good education. It is based on accurate and current information. It is appropriate for the ages being taught, addressing concepts that students will be able not only to understand but also to care about. It is free of bias. The curriculum, textbooks, and teachers focus on helping students discover, explore, and express their own knowledge and understanding rather than a particular viewpoint.

Environmental education connects many subjects within the curriculum. Its interdisciplinary nature pulls together the existing curriculum into a sensible and tangible whole. Learning parallels the "real world" by combining academic disciplines (English and language arts, mathematics, science, history and social science, visual and performing arts) in investigating the local environment, defining and assessing issues, and creating and communicating solutions.

Classroom-based case studies of 60 schools conducted by the State Education and Environment Roundtable[2] provide evidence that good environment-based education improves education in general and decreases discipline and attendance problems. A recent study (March, 2000)[3] paired eight conventionally structured California schools with eight demographically similar schools that had reorganized their curriculum to use the environment as an integrating context for learning. These schools use proven educational practices but emphasize the local community and natural surroundings as the primary venue for learning. Students in the schools using the environment-based model earned higher scores on standardized tests than their counterparts in more traditional settings.

[1] *See "Notes" on page 38 for the full bibliographical reference for this citation and the other numbered references that follow.*

Another report by the National Environmental Education and Training Foundation (NEETF) and North American Association for Environmental Education (September, 2000)[4] corroborates the findings from the California study. Case studies of individual schools, integrated groups of schools, and a statewide program that adopted environment-based education as the central focus of their academic programs showed:

- Reading scores improve.
- Mathematics scores improve.
- Students perform better in science and social studies.
- Students develop the ability to transfer their knowledge from familiar to unfamiliar contexts.
- Students learn to "do science" rather than just "learn about science."
- Classroom discipline problems decline.
- Opportunities to learn at a high level are equalized among students.

Because of the wide-ranging benefits of environment-based education, agencies and organizations that rarely share common interests nevertheless find a common goal in supporting education in and about the environment. The California Department of Education, the California Environmental Protection Agency, the Resources Agency, and the Department of Food and Agriculture have cited environmental education as an important tool for sharing information as well as a means to achieve excellence in education.

The Western Governors' Association[5] states, "Beginning with the nation's youth, people need to understand their relationship with the environment. They need to understand the importance of sustaining and enhancing their surroundings for themselves and future generations. If we are able to achieve a healthy environment, it will be because citizens understand that a healthy environment is critical to the social and economic health of the nation."

In the *California Education Code*,[6] the state Legislature "declares that an educational program is needed which is designed to build necessary attitudes of stewardship toward the maintenance of the quality of our common environment and to enable all citizens to use wisely, and not destructively, the resources at their disposal." More recently, the Legislature has demonstrated a renewed desire to coordinate its education efforts by establishing an Office of Integrated Education within the California Environmental Protection Agency.

The vision statement of the California Environmental Protection Agency includes this: "Improving the quality of life for all Californians requires the active participation of the people who live, work, and raise families in California."

The California Department of Education supports high quality environment-based education because it can play a critical role in helping educators implement a rigorous curriculum based on the highest international standards for education.

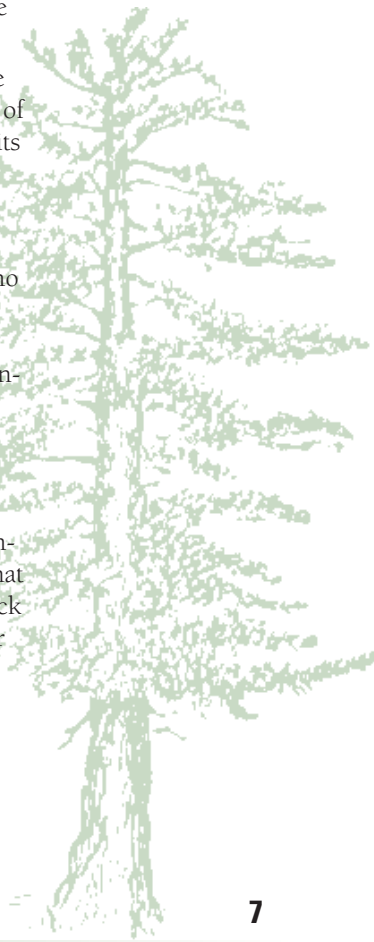
The Resources Agency says reaching the public with a message of respect for the environment and promoting an understanding of the landscape and resources of California "are central aspects of its mission and are crucial elements in helping California face the coming challenge of growth."

The National Business Education Association[7] in its 1999 Yearbook profiled the kinds of employees wanted: employees who can work in teams, create analytical reports, interpret data, and make decisions; leaders and visionaries; critical thinkers; skilled communicators; self-starters who are flexible and ethical. Environment-based education provides students with experiences that develop those skills.

According to a 2001 Roper Starch Worldwide survey commissioned by the National Environmental Education and Training Foundation,[8] 95 percent of adult Americans endorse environmental education in schools. This same report, however, indicates that environmental illiteracy remains widespread—that Americans lack the basic knowledge and are unprepared to respond to the major environmental challenges they face in this century.

"Improving the quality of life for all Californians requires the active participation of the people who live, work, and raise families in California."

- From the California EPA vision statement



The Strategic Initiatives

This plan assumes that the most fundamental requirement for environmental education, as with any other fundamental subject, is agreement on terms, purposes, and processes.

Hundreds of state and county agencies, nonformal educational organizations, and schools offer environmental education programs and services to California's students. However, there is no clear statewide picture of how much or what kind of environmental education occurs in the state's classrooms. Nor is it clear how much and what kind of preparation and training teachers and nonformal educators receive to ensure educational and scientific soundness. This plan assumes that the most fundamental requirement for environmental education, as with any other fundamental subject, is agreement on terms, purposes, and processes.

California's current environmental education situation parallels a key finding of the U.S. EPA's National Environmental Education Advisory Council[9] that the "overall [national] environmental education effort is currently too diffused and fragmented to effectively fulfill its crucial role in our society." Numerous groups (see Appendix C) set directions for environmental education in California, but no one group monitors progress or provides statewide leadership. This plan calls for establishing both the means and the mandate for coordination among agencies, groups, and individuals to streamline efforts and eliminate duplication.

In spring 2000, the California Department of Education's (CDE) Office of Environmental Education initiated the development of this plan at the request of the State Superintendent's Environmental Education Task Force Steering Committee and the CDE's Environmental Education Advisory Committee. Supported by a grant from environmental license plate funds administered by the CDE Office of Environmental Education, the purpose of the project was to gather the best ideas for increasing the quantity and improving the quality of environmental education programs in California. A number of other state agencies and nonprofit organizations contributed funds and services to this process (see "Acknowledgments"). The California Community Forests Foundation served as the fiscal agent for this endeavor.

The Environmental Education Task Force Steering Committee guided the development of this plan through a 13-member "working group," composed of volunteers representing a cross-section of environmental education leaders. The group distilled ideas and priorities from the more than 700 participants who attended 12 regional listening sessions.

The overall goals of this plan can be summarized in three statements that come directly from the listening sessions:

- Make environment-based learning accessible to all students, wherever they live and whatever their economic, cultural, or ethnic background.
- Strengthen and expand existing environmental education programs so that all students are regularly engaged in both outdoor and community-based learning.
- Establish more effective mechanisms to coordinate and support all aspects of environmental education throughout the state.

To achieve those goals, the working group developed six "strategic initiatives" that it believes capture the reasonable and feasible actions that must be initiated to guide the full, appropriate, and equitable implementation of comprehensive environment-based education in California. The initiatives form an outline of the steps that will strengthen existing environmental education programs, build statewide leadership, enhance public awareness and support, and increase available resources. The six initiatives are:

1. Ensure that high caliber environmental education is practiced in California's schools and communities.
2. Disseminate resources and services that can increase the quality and quantity of environmental education in California.
3. Increase the capacity of educators, community members, and other providers to design, develop, and deliver environment-based education effectively.
4. Ensure the quality and cost-effectiveness of environment-based education programs through ongoing assessment and evaluation.
5. Increase support and funding for environment-based education in California.
6. Establish inclusive statewide leadership that monitors and guides progress on implementation of the plan for environmental education and evaluates its success.

The strategic initiatives are the heart of this document. They fit into two categories: those that improve the quality and distribution of environmental education programs (initiatives 1–4) and those that increase leadership and funding for these programs (initiatives 5 and 6). Individually, each initiative has the potential to enhance environmental education, but true success will depend on the cumulative results of all initiatives.

The following sections summarize the rationale and expected results for each of the strategic initiatives. The descriptions are intended as a starting point for the design and development of the programs, projects, and activities that will be required to achieve the initiatives. By the nature of the subject and the processes proposed, much of the final design and specific implementation must be local. Success in implementing this plan will depend on enlightened leadership, the development of partnerships, the encompassing of disparate ideas and opinions, commitment among California's diverse communities, and a great deal of focused but not isolated effort by local educators.

The strategic initiatives are the heart of this document. They fit into two categories: those that improve the quality and distribution of environmental education programs...and those that increase leadership and funding for these programs.

Strategic Initiative 1

Ensure that high caliber environmental education is practiced in California's schools and communities.

Over the past 30 years, numerous environmental education programs have been initiated throughout California, and some have been highly successful. The majority, however, lacked the resources for full implementation or final evaluation and, therefore, cannot be fully documented or proven to be effective.

Inadequate funding and poor communication have caused most of California's environmental education programs to operate in isolation. Lacking the opportunity to learn from successful programs in other parts of the state or nation, all too often these programs waste precious resources rebuilding foundations rather than building on previous successes.

Funding alone is not the solution, however. Environmental education must also be fully integrated into the broader educational system. Like most states, California has adopted academic standards and tests students' achievement on the basis of those standards. School districts establish their curricula on the basis of what is tested as well as what is expected. Environmental education programs must be able to demonstrate how they help students meet the state's standards, but environmental education must also be included in those standards to have the leverage to fit into tight academic schedules.

Environmental education has been given a chance and has proven its value as an area of study as well as a tool to aid learning in general. Existing programs and organizations, such as those cited below, offer models as well as opportunities for further integration and wider awareness:

- Professional development programs offered through formal education are highly effective in training teachers, and those who have designed such programs must be partners in designing training programs for teachers. Some examples are the Beginning Teachers Support and Assessment Project, the Association of California School Administrators, the California School Leadership Academy, the California Writing Project, the California Science Project, the California Teachers Association, the K-12 Alliance, and the Association for Supervision and Curriculum Development.
- Professional development opportunities offered through nonformal programs and supported by various organizations provide services to thousands of educators each year. Some of the organizations are those associated with museums, aquariums, zoos, nature centers, botanical gardens, parks, professional associations, and governmental agencies .
- Outdoor science programs demonstrate effective methods of using outdoor activities to support broader educational goals and meet achievement standards across the curriculum. Many such schools also incorporate environmentally sound practices in operating their campuses and can also serve as logistical and administrative models.
- Service-learning offers a model for allowing students to learn and develop through community service programs that are directly integrated into the curriculum. Other programs that have similar functions, if not the scope, are urban neighborhood improvement projects, habitat restoration projects, school and community gardens, environmental monitoring, and "adoption" programs for endangered species and habitats.
- School-to-career programs reflect the content and strategies of environment-based education to ensure a work force prepared to consider the environment in daily decisions. Such programs prepare students for employment in environment-related fields, such as environmental planning and management, environmental health, and community and land-use planning.
- Other professional educational organizations, such as the California Science Teachers Association and the California Council for the Social Studies, must be full partners in designing and establishing environmental education programs to ensure broad support and academic effectiveness.

Establishing environmental education programs must include the means and the methods for evaluating their effectiveness. Evaluation programs and tools must be created, standardized, and fully funded to assess the educational and other benefits to students, their communities, and the environment. The evaluations must then be used as the basis for a statewide and regionwide catalog of proven programs and procedures.

Expected Results

Success and failure are equally valuable. A well-organized, well-documented, and well-evaluated program is an open guidebook of what works or what does not. The four activities described below will lead to the following three benefits:

- High caliber environmental education opportunities for all students in urban, suburban, or rural communities
- A growing and accessible archive of case studies illustrating best practices and encouraging the development of more programs based on proven models
- Greater administrative support and funding for proven environment-based and environmental education programs

Recommended Activities

A. Identify effective programs.

Conduct a statewide inventory of existing environment-based education programs that research indicates are academically effective. Use this information to publicize effective programs and encourage additional research on model programs and practices as a means of ensuring effectiveness and continuous improvement.

Educators should receive support to use environment-based education practices that are proven effective in improving academic performance, increasing community involvement, and instilling environmental stewardship. Community members and technical experts should work with school representatives in shaping educational programs, but the programs should be evaluated and perpetuated on the basis of research and reproducible results.

Sound research is essential to making decisions about how environmental education programs should be designed and implemented. Such evidence is also crucial to building a case for increasing environment-based education in school systems and communities.

B. Create demonstration projects as models.

Support and develop programs and sites to demonstrate the most effective environment-based education practices. Such demonstration projects will facilitate professional development, public awareness campaigns, and ongoing research.

New programs should be encouraged to be based on the proven models and demonstration programs but should not be carbon copies of them. Educators and community organizations are more willing and motivated to try new approaches if they learn about the challenges that others have overcome.

Ready access to demonstrations of effective environmental education programs serves to strengthen professional development, improve program design, and build community support. Teachers learn from the successes and challenges of others. Policymakers see the results of their work and learn firsthand the benefits and needs. Community leaders and members learn what is possible and how to participate in and shape environmental education programs in their communities.

C. Promote awareness of the model projects.

The models and demonstration programs will be effective educational tools only if educators, decision-makers, and the public are aware of them. Too many successes remain unshared; too many teaching practices remain unchanged. Those providing training services for teachers and other educators must integrate new and proven models into their training programs. Parents must first be aware of a program's existence before they can know its benefits, much less support and participate in it.

D. Encourage and support cooperative efforts to avoid duplication of programs and services.

Environmental education organizations must learn to link their efforts strategically to avoid duplication and dilution of services. Some students receive multiple opportunities to participate in environmental education activities while others, often in rural and inner-city communities, remain underserved. Because it is unlikely that any one organization or program will have enough funding to serve all those who need its services, efforts to ensure high quality environmental education must be integrated.

Strategic Initiative 2

Disseminate resources and services that increase the quality and quantity of environmental education in California.

To initiate and continue effective environmental education programs, an educator must have access to the best teaching resources. Such resources—including pedagogical, curricular, and instructional materials—must be scientifically sound, proven effective, and broad enough in scope to address the diverse needs and localities of California. Many good environmental education materials and programs have been developed. Educators need to be able to find them easily in a form that is clear and readily adapted to the instructional setting. Good environmental education must have a structure for collecting, evaluating, and distributing materials that guide educators to develop, support, and continue quality programs.

Expected Results

This initiative will result in greater awareness, faster access, and faster implementation of the best environmental curriculum possible. The implementation of the initiative will result in:

- More time implementing successful programs than trying to find and evaluate them
- Broader promotion and use of the best available resources and services
- Well-established, efficient, and fully funded mechanisms for disseminating information about environmental education resources and services to educators

Recommended Activities

A. Develop evaluation instruments to assess environmental education resources.

Teachers and other educators must have user-friendly tools that help them recognize appropriate and effective materials and programs. Different instruments will be appropriate for different types of programs or materials: community-based projects; field trips; residential outdoor science schools and other outdoor programs; supplemental curricular activities; integrated, thematic curricula; computer software; and audiovisual media.

Environmental education, like all other parts of a good education, should empower rather than indoctrinate students.

Examples of environment-based programs are described in *Environmental Education for a New California: The California Guide for Environmental Literacy,* available from the California Department of Education in Fall 2002.

Existing assessment tools provide a strong starting point. Some may be adequate as they stand; some will have to be strengthened or revised to meet California's needs. Instruments that should be reviewed include the California Regional Environmental Education Community (CREEC) Network's "filter for basic quality," the evaluation tools in the *California Environmental Education Compendia* (see Appendix C for more details) and the North American Association for Environmental Education's *Environmental Education Materials: Guidelines for Excellence*.[10] Other tools should be identified, assessed, and applied until all possible evaluation areas are covered. One especially significant area is assessing the impact of environment-based education on particular populations, such as at-risk students and those learning English as a second language.

B. Strengthen existing and build new mechanisms to increase the dissemination of resources and services.

Identify current needs, classroom constraints, and awareness levels of educators regarding the availability of environmental education resources and services. Though some mechanisms exist for disseminating information about resources and services, the availability and extent of their use have not been established. Part of the problem is lack of centralized information. Perhaps the best current example of a service that identifies, evaluates, and disseminates information about such resources is the California Regional Environmental Education Community (CREEC) Network. Its effectiveness is limited by part-time staffing and partial funding, but it demonstrates the potential for such an effort. Both print and on-line resource directories of evaluation results are effective but under-used tools. (See Appendix C for examples.) They must be strengthened, more widely promoted, and more thoroughly distributed.

C. Disseminate and encourage the use of evaluation instruments that assess the quality of environmental education materials and programs.

The value of good evaluation instruments is tremendously enhanced when those instruments are well known, widely available, and regularly used. Such instruments should be broadly promoted in such venues as state and regional conferences in all disciplines; county offices of education; school libraries; electronic distribution lists and web sites; pre-service and in-service training programs; publications; and professional development workshops. Evaluation instruments must be regularly reevaluated to reflect current educational research and practice.

Strategic Initiative 3

Increase the capacity of educators, community members, and other providers to design, develop, and deliver environment-based education effectively.

High quality materials do not stand on their own; environment-based education is only as effective as those who teach it. Yet many teachers and others with responsibilities for providing environmental education receive little or no specific training. Most credential programs touch only lightly on interdisciplinary, community-based approaches that involve students in real-world investigations or service-learning. The demands and intensity of a teacher's education and the plethora of education reform initiatives keep training in environmental education on the back burner.

As a statewide program of environmental education is developed, environmental education should be given priority in credentialing programs and schools of education. Such emphasis is a necessary step toward the goal of establishing environmental education as the context in which other curricular subjects are presented.

A few university and college-based environmental education degree and certificate programs exist in California and could form the foundation for efforts to develop and expand training for educators. Ongoing long-term support for teachers must be part of any training program. Partnerships among schools, colleges and universities, public agencies, businesses, and community organizations are essential to achieving this goal.

Because there are numerous and diverse audiences, educators need to be well versed in strategies for implementing environment-based education with such students as those with special needs, at-risk youth, and the economically disadvantaged.

Expected Results

This initiative will result in more effective environment-based education — from individual classrooms to entire district and state curricular areas, including the following specific results:

- Environment-based teaching and learning as a permanent and fundamental element of teacher certification
- Adequate money and administrative backing for training teachers (such as providing substitutes, presenter fees, and stipends)
- Every teacher in the state competent and comfortable with environmental education methods and content as a major component of their curriculum
- Increased commitment from community organizations and public agencies to offer adequate environment-based education training for nonformal educators

Ongoing long-term support for teachers must be part of any training program.

Recommended Activities

A. Define and develop expectations for the structure and the content of an environmental education program.

Expectations for environmental literacy must be defined for all grade levels, just as they have been for language arts and mathematics. Existing state and national content standards for other disciplines should be used for presenting the scope of expectations and the sequence in which skills should be mastered. Guides specific to environmental education are listed in Appendix C.

The knowledge and skills that educators need to provide high quality environment-based education must be just as thoroughly researched, stated, and implemented as they are for other subjects.

The same kinds of expectations applied in the development of environment-based education programs must be applied to those presenting the material. The knowledge and skills that educators need to provide high quality environment-based education must be just as thoroughly researched, stated, and implemented as they are for other subjects. The *Guidelines for the Initial Preparation of Environmental Educators*[11] is an example of a document that can be used as a foundation for establishing such expectations. California's colleges and universities that train teachers must develop the capacity to deliver effective environmental instruction, both in terms of accuracy and appropriateness of the content as well as appropriate integration through interdisciplinary approaches.

B. Inventory and assess training programs for educators.

Once training needs have been defined, existing education and training programs must be assessed to determine how well they meet those needs. Gaps can then be identified and strategies recommended for improving professional development for educators in all settings.

C. Describe best practices for professional development.

A set of "best practices" can serve as both a model and a standard for teaching teachers. These practices should be used to design a strategy for working within existing teacher training programs to integrate environmental education into their programs. For maximum effect, the strategies identified should engage teachers in the same outdoor experiential activities they are encouraged to use with their students. State-funded subject matter projects (for example, the California Writing Project and the California Literature Project) provide professional development in core subject areas. A parallel project could provide the same support for continued development in environmental education.

Strategic Initiative 4

Ensure the quality and cost-effectiveness of environment-based education programs through ongoing assessment and evaluation.

Thorough assessment and evaluation must support all decisions as the direction of environment-based education in California is set. To be as effective as possible in environmental, social, and economic impact, environmental education must be composed of the best programs and practices. The programs must be proven to make a substantial positive difference in academic achievement, student and teacher motivation, character building, community involvement, and environmental health. After the initial implementation of environment-based education, evaluation must continue to be an integral part of its administrative structure.

Expected Results

Taking stock – evaluating programs and progress – is critical to knowing what's been done and what needs to be done, what's wrong and what's right, including revealing the following:

- Benefits in environmental health and resource conservation throughout California
- Increased number and depth of programs across the state, with different types of programs targeted where they are most needed
- Increased knowledge of what works and evidence for the effectiveness of environment-based education, which will be useful not only to educators, but also for increasing public and legislative support

Recommended Activities

A. Administer appropriate assessments.

The impact that programs have on students, teachers, administrators, and nonformal providers must be the determining factor in the decision of which to support and continue. Assessment must be a standard component of any curriculum. For students, the evaluation criteria should include academic achievement and grade point averages, attendance and discipline, community involvement, critical thinking, communication and leadership skills, and knowledge of the environment. Teachers' attrition rates, motivation, and morale can reveal much about a program's effectiveness. Support from administrators and lower attrition rates are potential measures of effective programs. In effective environmental education programs, nonformal providers should be able to demonstrate increased adherence to state standards, integration of programs into the school curriculum, and higher levels of staff training.

B. Evaluate other benefits of environment-based education.

Educational effectiveness is one part of a complex picture. Equally important are tangible benefits to the environment and economic benefits such as cost savings. Ongoing assessment of environment-based programs should measure tangible changes in environmental management systems. On school campuses such changes might be manifested as reduced water and energy use, resulting in decreased utility bills; reduced waste generation, resulting in fewer landfills; and reduced use of insecticides or pesticides, resulting in decreased exposure of students to toxic substances.

C. Evaluate the breadth of environment-based education and the diversity of the audiences served.

Environment-based education programs must ensure complete and equal access for all students. The types of students served must be analyzed in terms of such factors as socioeconomic status, ethnicity, environmental health, and community size to ensure that programs are adequately reaching audiences representative of this diverse state. Data such as the number of students, classes, and schools participating in environmental education programs should be collected and analyzed to ensure that resources are proportionally distributed among students in urban, suburban, and rural communities.

D. Evaluate the depth and effectiveness of environment-based education.

An increase in the number of students participating in environment-based education would reveal that the quantity of programs statewide is rising. It is equally important to know that the quality, depth, and overall effectiveness of such programs are increasing as well. Factors such as time spent in environment-based instruction, degree of student involvement in their communities, reductions in discipline problems and absences, rises in grade point averages, and attendance at week-long residential outdoor science schools can be used to evaluate the depth and effectiveness of environment-based programs and services.

Strategic Initiative 5

Increase support and funding for environment-based education in California.

Sections of the California Education Code already encourage but do not require education in and about the environment. The standards-based testing programs that shape much of the curricula in California's schools emphasize single disciplines rather than the multidisciplinary approach characteristic of environment-based education.

Current levels of funding for environment-based and environmental education are insufficient to educate California's six million students. Each year, fewer than four percent of California's K-12 students attend Residential Outdoor Science School (ROSS) certified programs.[12] That number reflects the lack of state funding that forces parents and districts to pay for these programs. Most environmental education programs are focused on elementary students, and substantial increases in all resources are necessary to meet the needs of middle and high school students.

Because state agencies tend to be able to fund only what they are required to fund, a comprehensive legislative requirement is critical to the involvement of key agencies, such as the Resources Agency and the California Environmental Protection Agency. Both of those agencies sponsor educational programs, but the implementation efforts are not consistent or coordinated between these agencies.

Expected Results

This initiative will result primarily in increased funding for environment-based education. Funding and other types of support are seamlessly related, leading to these chief results:

- Sufficient funding for effective environment-based education to become part of the curriculum in every school
- Increased financial support for the institutions and organizations that offer school-related environmental education programs
- Improved academic performance through high caliber environment-based education opportunities for all students in the state
- Effective and efficient distribution of funds to support equitable environmental education programming throughout the state
- Rich, rigorous, and relevant environment-based learning opportunities for every student in California, whether they live in urban, suburban, or rural communities

Recommended Activities

A. Consolidate legislation that supports environment-based education.

Many policies and laws affect the implementation of environment-based education in California. All legislative and regulatory components should be examined to identify gaps and duplication, opportunities for coordination, and the need for mandates. Such an analysis is the necessary first step in securing legislative support for environmental education. Proponents of environmental education must then build bipartisan political support for appropriate legislation.

Current levels of funding for environment-based and environmental education are insufficient to educate California's six million students.

B. Ensure adequate funding from existing and new sources for state, regional, and community-based programs.

State government has offered valuable leadership, policy commitments, and interagency cooperation for environmental education. For example, the California Environmental Education Interagency Network now involves 20 state agencies, many of which have met monthly since 1993 to coordinate and support environmental education statewide. The Office of Environmental Education in the Department of Education has guided and supported environmental literacy for more than 30 years. These efforts, however, have never been funded at a level that would enable fully empowered leadership throughout the state.

Although government funds for education about the environment are available, they are often earmarked for specific issues. Private money is often targeted for use in specific regions, with specific audiences, or for start-up ideas rather than continuation of proven programs. Currently, funding is not readily accessible or effectively distributed throughout the state. Adequate funding is key to the significant and sustained growth of environment-based education in California.

Current funding sources and channels for environment-based education must be examined so that sufficient funding can be provided to support in-depth programs for all California students. Areas of overlap and potential consolidation can be identified. Collaborative funding programs that optimize funding's effectiveness, such as public-private partnerships, should be sought. Joint government funding programs that meet environment-based education needs and simultaneously achieve the mandates of multiple resource agencies should be identified.

Corporate and foundation representatives must also be better educated about the economic, educational, environmental, community, and other benefits of environment-based education. A strong statement articulating these benefits might be of use, as might proposing to corporate and philanthropic entities specific funding opportunities based on identified gaps in local, regional, or statewide programmatic or research needs.

C. Generate broad public support for expanding environmental education.

Fully incorporating environmental education into California's educational system requires strong public support. The benefits of environment-based education must be linked to public priorities. One effective means of creating that linkage is to identify public and legislative champions who will promote environmental education. Parents can have tremendous influence over the instructional approaches used at their children's schools. Community leaders can effectively encourage legislative support.

Strategic Initiative 6

Establish inclusive statewide leadership that monitors and guides progress on implementation of the plan for environmental education and evaluates its success.

The key to successful integration of environmental education into mainstream education in California is leadership. No plan for establishing and developing environment-based education will be effective without ongoing monitoring, careful assessment, and thoughtful guidance. The many environment-based programs and services in the state are not assessed and held accountable to uniform standards, and no agency has the authority to establish and uphold such standards. There is currently no statewide organization with the capacity to fill the gaps in leadership and service.

Expected Results

This initiative will result in increased understanding and agreement among all the practitioners and supporters of environment-based education. Such agreement must be the basis for establishing standards that make clear leadership possible, including the following:

- A prominent entity to which environmental educators throughout the state look for leadership
- A cohesive, unified effort to expand environment-based education and training
- Accountability for growth and development of environmental education, the required ingredient for progress
- Assurance that planned expansion of environment-based education will reach all educational constituencies

Recommended Activities

A. Establish a leadership council and an environmental education foundation.

As an important component of statewide leadership, a leadership council can function as an oversight committee for the subject area. It can provide the guidance as well as identify the resources needed to increase and improve environment-based education. Environment-based education calls for the involvement of teachers, parents, students, school administrators, colleges and universities, nonformal educators, community organizations, businesses and industries, government agencies, legislators, and environmental groups. Each constituency needs a voice in leading environment-based education. Such representation helps gather and maintain the commitment of the broad range of California citizens and constituencies with a stake in the implementation of environmental education.

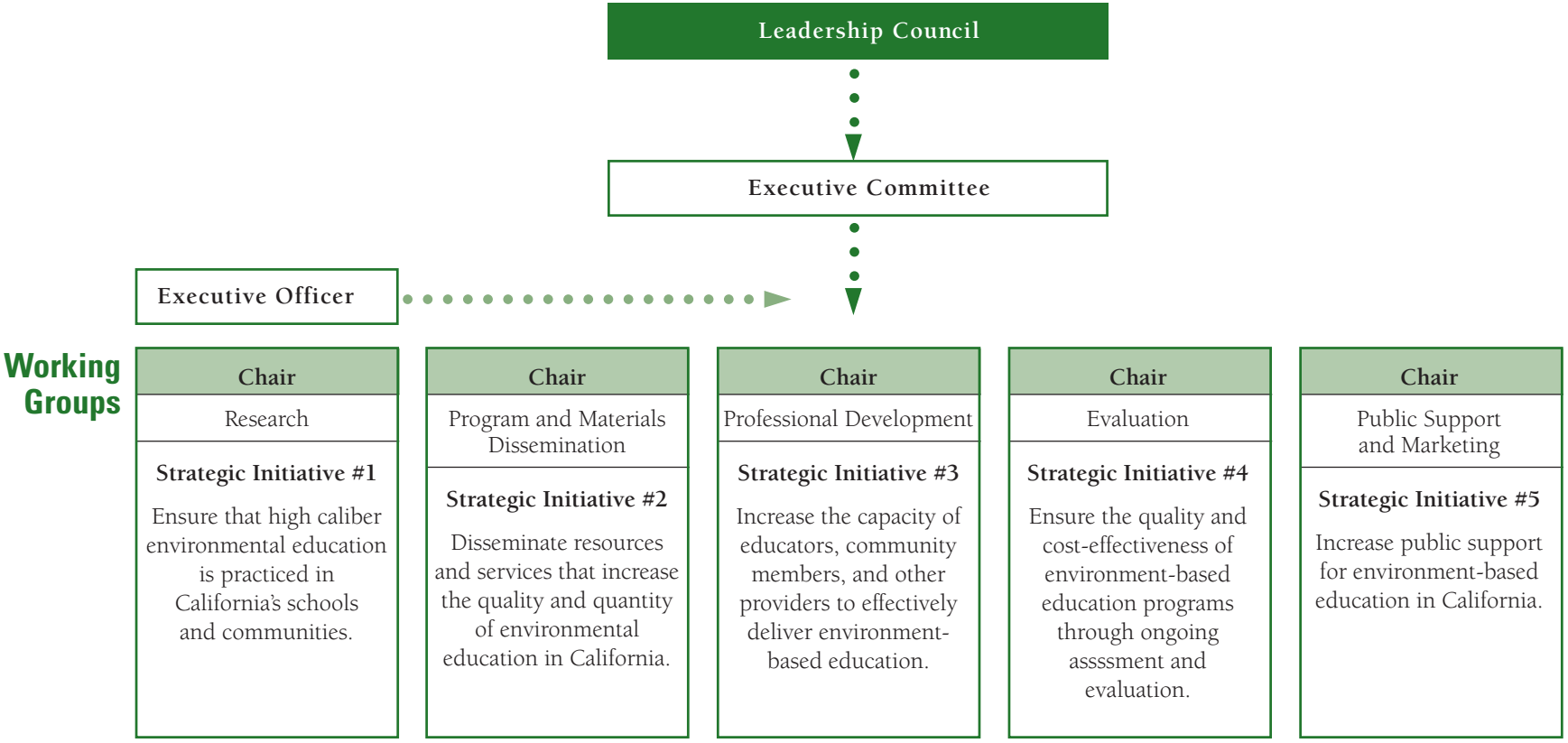
The council must include individuals who will champion implementation of this plan and are knowledgeable in the design and implementation of programs that focus on either education or the environment or both. This plan recommends that the State Superintendent's Environmental Education Task Force Steering Committee determine the initial membership of the leadership council. Once established, the council would adopt organizational procedures and a membership structure.

The leadership council must be large enough to ensure diverse and adequate representation, yet small enough to function efficiently. The structure will include operating committees that allow the involvement of a broad cross-section of stakeholders. The council should include an honorary executive committee composed of decision-makers with the capacity to leverage the financial and community support required to effect a statewide commitment to environmental education.

A nonprofit environmental education foundation should be established to fund implementation of the state plan. Thus, funds allocated for implementation of one or more strategic initiatives could be administered through the foundation. An executive director and board of directors would provide fiscal and operational oversight of the foundation's funds.

B. Identify the roles and responsibilities of the constituents who will implement the plan.

There are hundreds of individuals, agencies, and organizations active in environmental education in California. To ensure efficiency, reduce duplication and waste, and fill existing gaps, the roles and responsibilities for carrying out this plan must be clearly defined.



To ensure efficiency, reduce duplication and waste, and fill existing gaps, the roles and responsibilities for carrying out this plan must be clearly defined.

One proposed strategy for implementing this state plan is the formation of a leadership council composed of an executive committee and series of working groups. This structure will provide general statewide leadership and involve individuals and working groups in specific tasks that are derived from the six strategic initiatives. The diagram above provides a representation of how such a council could be formulated.

The leadership council through its membership will monitor, assess, and guide progress on implementation of the overall plan. The executive committee will include all working group chairs as well as representatives of key agencies and professional organizations (COSA, AEOE and GSEEC).

The working groups will bring together specialists working in the field of environment-based education with other interest-based groups and business representatives. Critical to the success of the leadership council is the availability of sufficient funds to the working groups so that they can conduct their business on a regular and professional basis. The working groups should create work plans and submit them to the leadership council for statewide integration and coordination.

C. Produce annual progress reports on implementation.

This plan contains a framework for substantial educational reform in California. Implementation cannot occur without the continued investment of resources and commitment by all constituents. The leadership council must, therefore, regularly assess implementation of environmental education and publish annual reports of its progress. The reports should include priorities for future actions.

Call to Action

What can you do to improve environmental education in California?

There is no single answer to that question. Action and support are essential at many levels. The strategic initiatives, though broad and not parallel in one sense, can be thought of as the possible gateways to action, depending on a person's or group's position, skill, time, and interest.

If you are a lawmaker, policymaker, or administrator, Strategic Initiative 6 can be your guide to further research and action at the level of establishing necessary administrative, legal, and leadership structures.

If your strengths are in funding and finance, then Strategic Initiative 5 is for you. This involves not just providing funds, but creating long-term structures to generate and manage funds.

If you are an educator, then the first four initiatives offer several means to learn about, support, and create environmental education programs.

If you are a parent or any other citizen of California, then all the initiatives are potentially for you since the underpinning of any action or program must be from you and for you. Finding a role to play ensures not only that more voices will be heard but also that the critical factor of local participation will be as strong as it must be for a successful program.

If you want to learn more or find out where help can best be focused, visit the web site set up for that purpose:

www.californiaee.org or contact leadership@californiaee.org

Appendix A: Overview of the Plan Process to Date

The California Department of Education's (CDE) Office of Environmental Education initiated the development of this plan as a result of recommendations from both the CDE's Environmental Education Advisory Committee and the State Superintendent's Environmental Education Task Force Steering Committe. The Steering Committee participated in every aspect of the plan's development. The project goal was to determine priorities for increasing the quality and quantity of environmental education in California classrooms.

In July, 2000, CDE awarded a grant to the California Community Forests Foundation to facilitate the development of a state plan for environmental education. Monies came from California's Environmental License Plate Fund, which allows CDE to give monies to support environmental education in California. The Foundation enlisted the support of an environmental education consulting firm.

Eleven listening sessions were held in spring 2001 to gather information about increasing and improving education in and about the environment in California. The California Regional Environmental Education Community (CREEC) Network hosted the sessions, which corresponded to the State Superintendent's service regions across the state, with assistance from the Golden State Environmental Education Consortium. A twelfth listening session was held in Sacramento for legislators and state agency personnel.

In an effort to solicit the broadest possible participation in this information gathering stage, 10,000 invitations were mailed to representatives of local and state government agencies, the formal and nonformal education communities, business and industry, and community organizations. Seven hundred people actually participated.

The three-hour listening sessions were designed to elicit input on one primary question: "How can we increase the quantity and quality of environmental education in California?" Professional facilitators used full group and small group discussions to derive prioritized recommendations for goals and specific action steps to achieve those goals. Each session was summarized and the results mailed to all participants for review and comment.

A volunteer working group carefully reviewed and analyzed the information from the listening sessions over a series of meetings in May and June, 2001. The recommendations were organized into the six strategic initiatives reflected in this document.

In July, 2001, all listening session participants were invited to comment on the draft plan. In the following months, the working group compiled and assessed all comments from the public review, made revisions to the draft, and solicited additional feedback from groups whose perspectives were considered underrepresented in the development process.

Simultaneous with the development of this document, the State Superintendent's Environmental Education Task Force Steering Committee met monthly to develop implementation strategies and leadership structures based on the strategic initiatives presented in this document.

Appendix B: Plan Reviewers

Thanks to those who contributed constructive comments and perspectives to the development of this plan. Affiliations in parentheses are listed for identification purposes only.

Stephen Aizenstat, Ph.D. (Pacific Graduate Institute)
Jennifer Anderson, (University of California Santa Cruz)
Rebecca Anderson-Jones, (Audubon Canyon Ranch)
Kay Antunez, (California Department of Forestry and Fire Protection, Project Learning Tree)
Conrad Benedicto, (Wilderness Arts and Literacy Collaborative)
Michael Berger, (Santa Monica Mountains Conservancy)
Charles Blair, (California Native Plant Society and Allan Hancock College)
Louis Blumberg, (California Department of Forestry and Fire Protection)
Herley Jim Bowling, (Mono Lake Committee)
Phaedra Bota, (Department of Boating and Waterways, Education Unit)
Kelly Braden, (California Association of Realtors)
Katharine Auld Breece, (Helix Water District)
James Bryant, (Riverside Municipal Museum)
Jeff Bryrant, (California Regional Environmental Education Community Network)
Heather Butler, (Web of Life Field School)
Mary Byrd, (Santa Barbara County Air Pollution Control District)
Vanessa Byrd, (Department of Toxic Substances Control)
California Environmental Education Advisory Committee
California Environmental Education Interagency Network
Chris Cameron, (California Regional Environmental Education Community Network)
Michael Charnofsky, (Association for Environmental and Outdoor Education)
Jack Chin, (Funders' Forum on Environment and Education)
Cheryl Chipman, (Yolo Basin Foundation)
David M. Cook, (Sierra Club Youth in Wilderness Program)
Judy Culbertson, (California Foundation for Agriculture in the Classroom)
Jim Curland, (Defenders of Wildlife)
Tim Dabiels, (Seven Tepees Youth Program)
Erica Dibello-Hitta, (Sweetwater Authority, a special district water agency)
Ralph Flores, (Watts Labor Community Action)
Mike Grant, (Marin County Outdoor School)
Steve Griffiths, (Sierra Club Youth in Wilderness Project)
Sylvia Gude, (California Department of Fish & Game, Project WILD)
Wendy Harrison, (California Regional Environmental Education Community Network)
George Hellman, (Hughes Network Systems)
Jeff Hohensee, (TreePeople)
Stephen Hoppy Hopkins, (Sly Park Environmental Education Center)
Cheryl Ingham, (Humboldt County Office of Education)
Pam Ivie, (Foothill Horizons Outdoor School)
Terry Janicki (California Department of Education)
Larry Kaplan, (California Urban Programs, The Trust for Public Land)
Mark Keegan, (California State University Chico)
Elisabeth Landis, (California Native Plant Society)
Dinah Lee, (Casa Grande High School)
Ellen Linsey, (Connect LA)
Rachel Maib, (Mountain Mill House Outdoor Center)
Tom Mays, (State Water Resources Control Board)
Jackie McCort, (Sierra Club Youth in Wilderness Project)
Haley Mears, (A Home Away from Homelessness)
Brian Miller, (Resources Agency)
Richard D. Murphy, Ph.D., (Ocean Futures Society)
Thomas Nelson, Ph.D., (University of the Pacific)
Jennifer Palyash, (Planning and Conservation League Foundation)
Donna Pozzi, (California Department of Parks and Recreation)

Appendix B: Plan Reviewers (continued)

Elizabeth Reuter, (Sierra Club Youth in Wilderness Project)
Duffy Ross, (Headlands Institute)
Celeste Royer, (California Regional Environmental Education Community Network)
Catherine Salvin, (Wilderness Arts and Literacy Collaborative)
Valorie Shatynski, (California Integrated Waste Management Board)
Natalie Schaefer, (California Regional Environmental Education Community Network)
Rudy Schafer, (Council for Environmental Education)
Susan Silber, (Hostelling International)
Patricia Stever, (California Foundation for Agriculture in the Classroom)
George Stratman, (San Diego County Office of Education, Outdoor Education)
Susana Taylor, (California Forests Products Commission)
William W. Vasey (California Department of Education)
David Walrath, (Small School Districts Association)
Keith Douglass Warner, OFM, (Franciscan Friars)
Victor Weisser, (California Council for Environmental and Economic Balance)
Elizabeth Whitlow, (Westminster Woods)
Gail Wickstrom, Ed.D., (Barstow Unified School District)
Maggie Wolfe, (Association for Environmental and Outdoor Education)
Stanley Young, (Resources Agency)

Appendix C: California Environmental Education Partnerships and Projects

- Association of Environmental and Outdoor Educators (AEOE) A membership organization for formal and nonformal environmental educators in California, which provides professional development opportunities through state and regional conferences. AEOE is the state affiliate to the North American Association for Environmental Education (NAAEE).
- California Department of Education's Office of Environmental Education (OEE)— Overseer of the state environmental education grants program, including competitive and state priority grants. The office also provides environmental education leadership in California, manages the CREEC Network, and collaborates with other agencies on curricular evaluation and development. A new publication, *Environmental Education for a New California: The California Guide for Environmental Literacy*, will be released by the office this year.
- California Environmental Education Foundation (CEEF) — A new foundation established to provide financial resources for both the strategic initiatives identified in the State Plan and the California Regional Environmental Education Community Network.
- California Environmental Education Interagency Network (CEEIN)— A network of state agencies, boards, and commissions with responsibilities related to the environment, created to coordinate and support statewide environmental education efforts.
- California Outdoor School Administrators (COSA) — An organization that conducts site inspections, certifies outdoor science schools for fourth to eighth grade students, and publishes the *Guide for Self-Appraisal and Certification* of *Resident Outdoor Science School Programs (ROSS) Guide*, which identifies evaluation criteria for certification.
- California Regional Environmental Education Community Network (CREEC Network) — A statewide environmental education network composed of 13 regional offices, each with one or more professional coordinators working to connect educators with high quality environmental education resources in their areas. CREEC is sponsored by OEE, state agencies, and local partners.
- Curriculum and Compendium Project — Sponsored by OEE and other state agencies, a comprehensive review of environmental education curricula. Curricula are evaluated by teams of educators and organized into a database that assists teachers in selecting highest quality resources on six topics: air quality, water resources, energy resources, integrated waste management and used oil, natural communities, and human communities. Each compendium includes a tool for evaluating environmental education curricula.
- Environmental Education Advisory Committee (EEAC) — Statewide committee of environmental education leaders to advise OEE on the use of state priority funds and other programmatic priorities. The EEAC evaluates state priority grant applications and conducts site visits for competitive environmental education grants recipients.
- Environmentality Challenge — Statewide competition to encourage fifth grade classes and clubs to research environmental issues and undertake related action projects. A public-private partnership sponsored by CEEIN and The Walt Disney Company.
- Golden State Environmental Education Consortium (GSEEC) — A consortium of representatives from formal and nonformal education organizations and government agencies to advance environmental education efforts in California, one of 12 states involved in the National Environmental Education Advancement Project funded by the U.S. Environmental Protection Agency.
- State Education and Environment Roundtable — A cooperative effort of education agencies from 16 states. SEER works to improve academic achievement and student behavior by helping educators learn to use the environment as an integrating context for learning (EIC) model to create a community-based school improvement program. Since 1998, more than 800 educators from over 450 schools have participated in SEER's professional development seminars to learn how to initiate EIC programs in their schools.
- State Superintendent's Environmental Education Task Force Steering Committee — A committee composed of leaders from government, education, environment, and business who assist the State Superintendent of Public Instruction in setting priorities for environmental education. The task force arose from a Superintendent's Summit on Environmental Education held in August, 1999, and researches and recommends strategies for advancing environmental education and sustaining the CREEC Network.

Notes

1 National Commission on Excellence in Education. (1983). *A Nation at Risk: The Imperative for Education Reform*. Washington, D.C.: U.S. Government Printing Office.

2 Lieberman, G., & Hoody, L. (1998). *Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning*. San Diego, Calif.: State Education and Environment Roundtable.

3 Lieberman, G., & Hoody, L. (2000). *California Student Assessment Project: The Effects of Environment-based Education on Student Achievement*. San Diego, Calif.: State Education and Environment Roundtable.

4 Glenn, Joanne Lozar. (2000). *Environment-based Education: Creating High Performance Schools and Students*. Washington, D.C.: The National Environmental Education & Training Foundation.

5 Western Governors' Association. (1999). "Policy Resolution on Environmental Management in the West." Policy Resolution #99-013. Denver, Colo.: Western Governors' Association.

6 *California Education Code* (1977). "Education Programs—Master Plans," Article 1. Policy, § 8700 ff. Sacramento, Calif.: California State Board of Education.

7 National Business Education Association. (1999). *The 21st Century: Meeting the Challenges to Business Education*: 1999 Yearbook. Reston, Vir.: National Business Education Association.

8 *Environmental Readiness for the 21st Century* (Prepared by Roper Starch Worldwide). (2000). Washington, D.C.: National Environmental Education and Training Foundation.

9 National Environmental Education Advisory Council (2000). *Report to Congress II*. Washington, D.C.: U.S. Environmental Protection Agency.

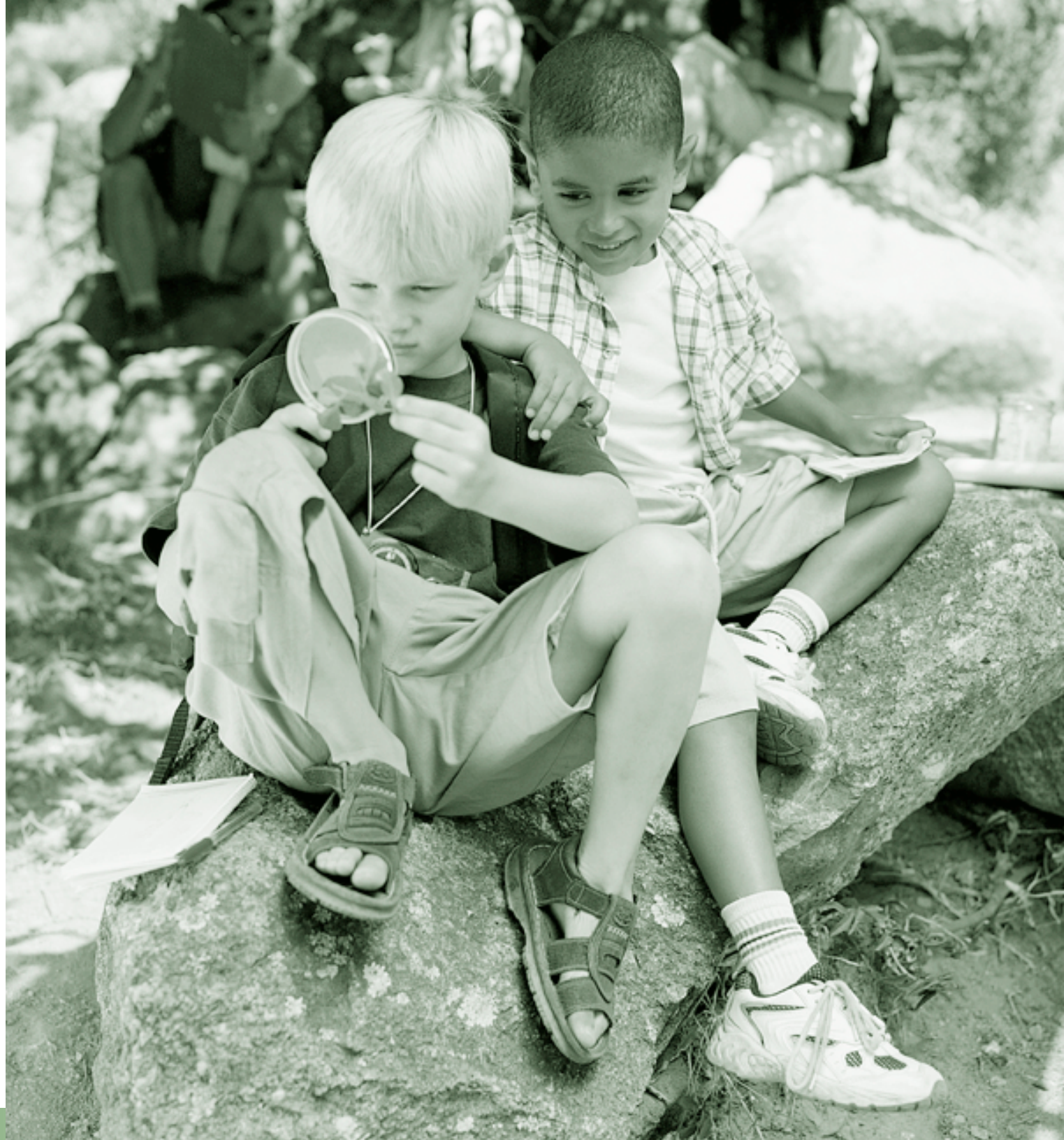
10 North American Association for Environmental Education. (1998). *Environmental Education Materials: Guidelines for Excellence*. Troy, Ohio: North American Association for Environmental Education.

11 North American Association for Environmental Education. (2000). *Guidelines for the Initial Preparation of Environmental Educators*, Rock Spring, Ga: North American Association for Environmental Education.

12 *Annual Report of the California Outdoor Science School Administrators*. (2000-2001). San Diego, Calif.: California Outdoor Science School Administrators.

Comments

Comments



EDUCATION & THE Environment

Strategic Initiatives for Enhancing Education in California

www.californiaee.org

Printed on recycled paper

ISBN 0-8011-1571-X